1. Amendments to the Claims:

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR § 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (currently amended) A method for forming a silicon-on-insulator (SOI) photodiode optical monitoring system, comprising:

providing a plurality of SOI photodiodes , wherein each SOI photodiode includes a silicon substrate , a buried oxide layer formed on the silicon substrate, and a silicon layer formed on the buried oxide layer, and wherein the silicon layer of each SOI photodiode has a different thickness;

determining a proportion of incident light passing through each SOI photodiode to the silicon substrate with respect to wavelength and the thickness of the silicon layer ; and

calculating color component intensities of the incident light based on the determined proportions.

2. (currently amended) The method of claim 1, wherein each SOI photodiode further comprises a field oxide layer on the silicon layer , and wherein the different thickness of the silicon layer of each SOI photodiode is provided by varying a thickness of the field oxide layer.

3. (currently amended) The method of claim 1, wherein the silicon substrate is doped with a dopant of a first type, and wherein each SOI photodiode is formed by:

forming a trench through the silicon layer and the buried oxide layer to expose a portion of the silicon substrate;

doping the exposed portion of the silicon substrate with a dopant of a second type to form a pn-junction; and

forming a contact in the trench.

4. (currently amended) The method of claim 3, wherein the contact forms an aperture of the SOI photodiode .

5. (currently amended) The method of claim 1, wherein the proportion of incident light is given by $e^{-a_\lambda x}$, where a_λ is an absorption coefficient of the silicon layer and x is the thickness of the silicon layer.

6. (currently amended) The method of claim 1, further comprising:

forming a vertical pn-junction in the silicon substrate .

7. (currently amended) The method of claim 6, wherein each SOI photodiode is formed by:

forming a trench through the silicon layer and the buried oxide layer to expose a portion of the silicon substrate ; and

forming a contact in the trench.

8. (currently amended) The method of claim 6, wherein the contact forms an aperture of the SOI photodiode .

9. (currently amended) A silicon-on-insulator (SOI) photodiode , comprising:

a silicon substrate having a first portion doped with a first dopant type and a second portion doped with a second dopant type, the first and second portions forming a pn-junction;

a buried oxide layer formed on the silicon substrate;

a silicon layer formed on the buried oxide layer, wherein an amount of incident

light passing through the SOI photodiode to the silicon substrate with respect to wavelength is proportional to a thickness of the silicon layer;

a field oxide layer formed on the silicon layer, wherein a thickness of the field oxide layer controls the thickness of the silicon layer;

a trench extending to the silicon substrate; and

a contact formed in the trench.

10. (currently amended) The SOI photodiode of claim 9, wherein the pn-junction is a vertical pn-junction.

11. (currently amended) The SOI photodiode of claim 9, wherein the proportion of incident light passing through the SOI photodiode to the silicon substrate is given by $e^{-a_\lambda x}$, where a_λ is an absorption coefficient of the silicon layer and x is the thickness of the silicon layer.

12. (currently amended) The SOI photodiode of claim 9, wherein the contact forms an aperture of the SOI photodiode.

13. (currently amended) A method of forming a silicon-on-insulator (SOI) photodiode , comprising:

providing an SOI structure including a silicon substrate , a buried oxide layer formed on the silicon substrate, a silicon layer formed on the buried oxide layer, and a field oxide layer formed on the silicon layer;

adjusting a thickness of the silicon layer by adjusting a thickness of the field oxide layer, wherein an amount of incident light passing through the SOI photodiode to the silicon substrate with respect to wavelength is proportional to the thickness of the silicon layer;

forming a trench to expose a portion of the silicon substrate; and

forming a contact in the trench.

14. (currently amended) The method of claim 13, wherein, prior to forming the contact , doping the exposed portion of the silicon substrate with a dopant to form a pn-junction.

15. (currently amended) The method of claim 13, wherein the silicon substrate comprises a vertical pn-junction.